



SEIZE THE MOMENT: Priorities, projects and recommendations for restoring the Gulf of Mexico

January 2013

Introduction

The Nature Conservancy has been active along the Gulf Coast for more than 40 years. We have state programs with local Boards of Trustees, land holdings, and activities in all of the Gulf Coast states. Our scientists have long been first-hand observers of the health of the region's coastal ecosystems. In recent years we have seen the health of the Gulf and its bays, estuaries and tributary rivers decline, jeopardizing the many values the Gulf of Mexico provides to coastal communities and to the country as a whole.

The most acute recent expression of that decline was the Deepwater Horizon oil spill. Resolution of fines and damages resulting from that spill offer the opportunity not just to respond to the most immediate impacts of the spill itself, but also to address some of the Gulf's long term problems in a way that will make the region, its communities, and its economy more resilient to ongoing stresses, such as storms and sea-level rise, as well as future acute disasters.

This interim¹ catalog sets out the Conservancy's recommendations for overall priorities for investment of Gulf restoration funds and suggests specific projects that reflect those priorities. While the Conservancy is willing to help wherever it seems useful in implementing restoration projects, our larger interest is to propose large-scale, complementary investment ideas that, regardless of who carries them out, will have lasting benefits for the Gulf of Mexico and the people whose lives, safety, and livelihoods are so entwined with the health and character of the Gulf.

Advancing large-scale restoration in the Gulf of Mexico

Restoration of the Gulf of Mexico should include a significant focus on three critical issues:

- Restoring healthy shorelines,
- Protecting freshwater resources, and
- Ensuring participation of Gulf communities and people in the economic benefits of restoration activities.

From supplying food to energy production to recreation, transportation and tourism, the Gulf of Mexico pumps \$234 billion every year into the American economy and supports more than 20 million jobs. But the health of the whole Gulf is heavily dependent upon the health of its

¹ An additional Gulf-wide scientific analysis will be completed in Summer 2013 and will be used to enhance and refine these projects

resources—its habitats, waters and people—and fines and penalties from the Deepwater Horizon oil spill should be directed to the lasting restoration of the Gulf by investing in actions that: (1) increase the resilience of coastal communities by restoring healthy shorelines, (2) protect and restore freshwater supplies to the Gulf, and (3) offer opportunities to Gulf Coast residents to participate in and benefit directly from the restoration in all ways possible, including jobs and healthier, more resilient communities.

This document includes prospective projects from all five Gulf States, including restoring at least 100 miles oyster reef and 1000 acres of marsh and seagrass in Alabama’s Mobile Bay and protecting and restoring broad swaths of Florida’s coastal forests and rivers. Though the projects are listed by state and have their own parameters, they are neither disconnected nor discrete. It is important to note that these projects are designed around the same goals and as such, this coordinated work has the potential to help restore Gulf Coast health across the whole system without regard to state borders.

While the concept of connecting natural system restoration with the health and resilience of the broader Gulf community is not new, there is no precedent for the opportunity to invest oil spill restoration fines and penalties at the scale needed to make such ideas reality. If properly planned, supported and funded, the activities proposed here will begin to restore the shorelines and water supplies that are so important to the lasting health and productivity of the Gulf.

Restoring healthy shorelines:

Increasing community resilience by restoring and protecting critical habitats

Focusing restoration on reducing community vulnerability makes good economic sense. In the last 10 years, hurricanes in the Gulf have caused more than \$200 billion dollars in damage. Healthy marshes, wetlands, reefs and other coastal habitats can help reduce that vulnerability by protecting against storm surges, erosion and coastal flooding. Over the next 20 years, the Gulf is vulnerable to an estimated \$300 billion dollars in economic damages from hurricanes. A FEMA-funded study found that every dollar invested in hazard mitigation results in four dollars of costs savings.

Projects such as oyster reef construction, marsh building, protection of coastal forests and strengthening living shorelines restore damaged ecosystems and reduce vulnerability to storms. Such actions strongly align with the Gulf Task Force’s report—*Gulf of Mexico Regional Ecosystem Strategy*. As noted in the Strategy, enhanced community resilience can be achieved by connecting ecosystem restoration with the well-being, and sustainability of coastal

communities. With additional investment, the Gulf can be a model for a multi-faceted and inter-jurisdictional approach to coastal hazard mitigation including decision support systems, restoration demonstration projects, and practitioner training.

Protecting and restoring important habitats also creates social and economic resilience by sustaining tourism and other coastal businesses, as well as improving critical nursery areas for the Gulf's fisheries. At least 97 percent (by weight) of the commercial fish and shellfish landings from the Gulf of Mexico are species that depend on estuaries and their wetlands at some point in their life cycle. Landings from the coastal zone in Louisiana alone make up nearly one-third (by weight) of the fish harvested in the entire continental United States.

While the concept of connecting natural system restoration with the health and resilience of the broader Gulf community is not new, there is no precedent for the opportunity to invest oil spill restoration funds at the scale needed to make such ideas reality. With a strategic selection and design of restoration projects the Gulf can be a world leader in aligning cost-effective restoration efforts to meet the joint goals of restoring the foundation of many of the Gulf's economies—fishing, tourism, and recreation—while simultaneously protecting vulnerable, local communities.

Protecting Water Quality: The lifeblood of the Gulf

Restoring and protecting the Gulf's water quality benefits everyone and everything that lives in the Gulf or depends on it. Clean, abundant supplies of fresh water are the lifeblood of the Gulf's fishing, agriculture and tourism industries, and provide important sources of drinking water for millions of Gulf Coast residents.

Just as importantly, habitat restoration in the Gulf—no matter how diligent or effective—will not last without an equal focus on projects that protect the quality and quantity of fresh water that reaches the Gulf. The estuaries and even the wider waters of the Gulf are highly dependent on reliable, adequate supplies of clean fresh water, which are, in turn, highly dependent on the lands and waters that drain to the Gulf of Mexico. The Dead Zone, for instance, is born in lands and waters thousands of miles from the Gulf and solutions to protecting and restoring the Gulf's water quality must measure and address all challenges.

Marshes and other coastal habitats in the Gulf region are highly dependent on healthy rivers, wetlands and forests. Many of the Gulf's most important shoreline buffers—oyster reefs, mangrove forests, marshes—depend on regular flows of fresh water for survival. Restoring and

protecting rivers that ultimately flow to key Gulf estuaries provide the fresh water and sediments needed to rebuild marshes while reducing the nutrient loads that create persistent dead zones in the Gulf.

Upstream forests, plains and wetlands also play an important role in protecting the Gulf's abundance. Coastal habitats such as prairies and forests also serve as important links in the life cycles of many species, including migratory birds. Water quality is extremely important to all who live in or along the Gulf—from sea turtles and dolphins to fishing and agricultural industries, to businesses that depend on the tourists and visitors who flock to the Gulf to enjoy the clear waters and white sandy beaches. As stated in the *Strategy*, improved water quality works in tandem with habitat restoration to increase the ecosystem services provided by a healthy Gulf.

Opportunity in the Gulf:

Helping people benefit economically, ecologically and socially

Directing funds to the restoration of the Gulf, also offers an opportunity for communities to participate in and benefit directly from restoration investments. Particular efforts are needed to involve people in restoration activities who have difficulty finding employment in a still-struggling regional and national economy.

A Gulf Conservation Corps could employ young people and military veterans in Gulf of Mexico communities to restore natural features of the Gulf and its estuaries and to construct facilities to provide community access to and a better understanding of the Gulf of Mexico's natural resources.

The Gulf of Mexico region includes many young people who live in coastal communities but who have limited contact with and knowledge of the natural resources so close to their homes. A Gulf of Mexico Conservation Corps could put thousands of people to work on important and visible restoration projects under the supervision of existing community organizations and, in doing so, would teach new skills and broaden opportunities, as well as increase local understanding of the importance of healthy natural resources.

Similarly, the Gulf region is also a part of the country with a number of military bases and many recent military veterans. Employing veterans with a variety of skills in conservation and natural system restoration would provide valuable training, a clear purpose, a sense of accomplishment, and a structured experience that would help in re-adjustment to civilian life.

Such a program would directly support a pressing need in the Gulf and answers the call for creation of a Veteran's Job Corps. Use of oil spill funds for these purposes offers a unique opportunity to put people in need to work, restore the critical natural infrastructure of the Gulf of Mexico, and build a long term constituency for the use and conservation of the Gulf of Mexico.

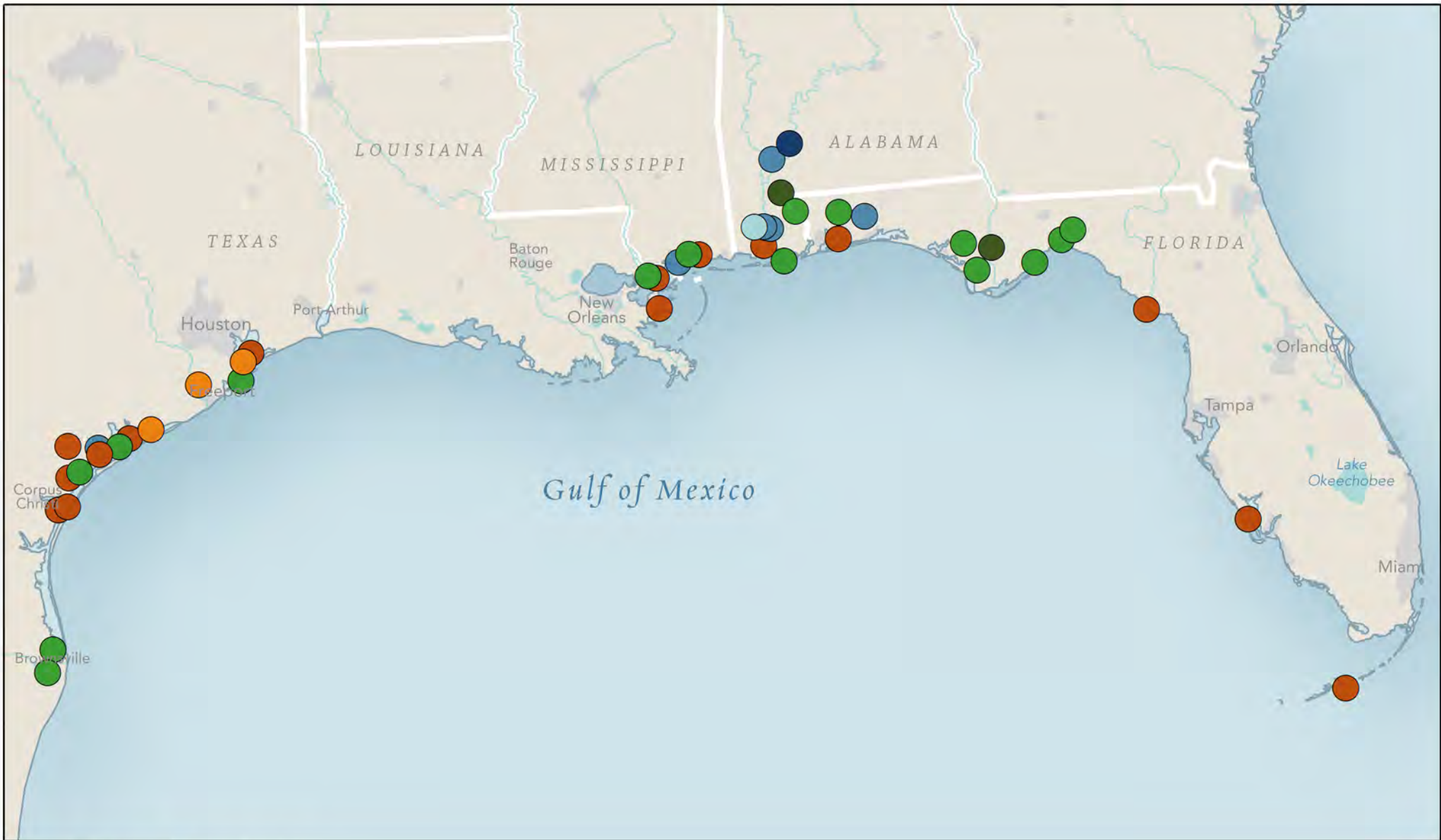
**Seize the Moment:
Restore the Gulf**

In the wake of both Hurricane Katrina and Deepwater Horizon, the people of the Gulf can seize the moment to strengthen their natural resource-based industries, diversify their economies, spur innovation and lead the emerging global market in environmental restoration. By recognizing, fostering and leveraging the connection between a healthy, sheltering environment and a healthy, vibrant economy, the people of the Gulf can create a legacy of renewal for themselves and for our nation.

The Conservancy's work, and that of many others, makes a strong case for the value and viability of restoring and reconnecting the Gulf's natural infrastructure—oyster reefs, coastal forests, marshes, rivers, mangroves and coral reefs. From the Florida Keys to Texas's Matagorda Bay, the Conservancy has shown that the Gulf's natural foundation—given the opportunity and the necessary assistance—can heal and ultimately sustain itself.

Restoration is the art of the possible. Ultimately, restoration in the Gulf is not about trying to roll back history to some imagined re-set point. Restoration success will depend upon the way the people of the Gulf choose to address the cumulative damages of historic degradation and how well they anticipate future changes. Restoring the Gulf environment so that it is resilient to natural events will help ensure that communities and their economies remain resilient as well.

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Gulf Coast Projects

- Near-Shore Habitat Restoration
- Near-Shore Habitat Restoration/Land Protection
- Near-Shore Land Protection
- Forest Conservation & Restoration
- Water Quality Restoration
- Shell Recycling
- Fish Migration Restoration



Alabama Projects

-  100-1000 Restore Coastal Alabama
-  Coastal Forest Restoration
-  Near-Shore Land Protection
-  Near-Shore Habitat Restoration
-  Fish Migration Restoration
-  Water Quality Restoration
-  Shell Recycling

ALABAMA

Over the last century, Alabama has experienced significant loss of habitats and water quality degradation from coastal development, dredge-and-fill activities, hardening of shorelines, erosion and storm events, among others. Despite these challenges, coastal Alabama represents one of the largest areas for restoration, replacement and enhancement of these lost habitats and water quality improvements. By focusing on conservation opportunities that holistically link land acquisition, habitat restoration, hydrologic connectivity, stormwater improvements and stewardship of forested and non-forested landscapes, significant improvement in the long-term health, resilience and sustainability of both the environment and the economy of Alabama and the Gulf will be realized.

Restoration projects to improve coastal resilience and overall health of the Gulf of Mexico.

NEAR-SHORE HABITAT RESTORATION

1. 100-1000: Restore Coastal Alabama – (\$150M)

**this project directly complements and links to the Alabama Shell Recycling Project*

100-1000: Restore Coastal Alabama is a partnership between federal and state agencies, organizations, academia, municipalities, non-profits, businesses and citizens to restore 100 miles of oyster reefs, creating the conditions needed to protect, support and promote more than 1,000 acres of coastal marsh and seagrass beds. This restoration effort will expand and enlarge proven projects to provide habitat for oyster larvae to settle and colonize, establish nursery habitat for commercially and recreationally important fish and shellfish, dampen wave energy, decrease erosion, stabilize sediments and improve water clarity. This coastal restoration project also includes critical workforce development, job creation and community involvement components to support and sustain the vision of a better coastal Alabama.

This project aligns with goals in Alabama’s Wildlife Action Plan, the Mobile Bay National Estuary Program’s Comprehensive Conservation Management Plan, and The Nature Conservancy’s Gulf of Mexico and Global Marine Strategic Plans. It will:

- restore habitat for commercially and recreationally important fish and shellfish,
- buffer public and private properties from erosion and communities from coastal hazards, such as storm surges and flooding,
- support more than 300 jobs during the 10-year construction period,
- sustain and enhance traditional fisheries livelihoods and their local cultures, and
- enhance local economies by boosting commercial and recreational fishing and

ecotourism.

2. Wetland Habitat Restoration in Upper Mobile Bay, Alabama – (\$90M)

**this project directly complements and links to the Mobile Causeway Project*

By repurposing dredge spoil, this habitat restoration project will create approximately 500 acres of marsh and three miles of reef habitat at the nexus of Mobile Bay and the south end of the Mobile-Tensaw Delta. This project also incorporates a public access component that will provide a parking area and public fishing pier off the Mobile Causeway, providing a safe area to access Upper Mobile Bay for land-based fishing, wildlife watching and public enjoyment.

Construction of the causeway in the late 1920s has long restricted the flow of water and sediments from the rivers that feed into northern Mobile Bay. Thus, sediment transport that would have naturally constructed and maintained these wetlands has been interrupted, contributing to the extensive loss and degradation of marsh in the system. This project proposes to recreate these lost marshes using dredge material that would otherwise be wasted and border them with living shoreline reefs to minimize erosion and increase habitat complexity.

This project aligns with goals in Alabama’s Wildlife Action Plan and the Mobile Bay National Estuary Program’s Comprehensive Conservation Management Plan. It will:

- restore critical wetland habitats, providing areas for seagrass recruitment and benefitting listed species, such as the endangered Alabama red-bellied turtle,
- buffer adjacent natural areas, as well as the nearby cities of Mobile and Daphne and emergency evacuation infrastructure, from erosion, storm surges and other coastal hazards,
- utilize dredge material that would otherwise be wasted,
- support local jobs during the multi-year construction period, and
- expand public recreation opportunities.

LAND ACQUISITION

1. Coastal Alabama Land Protection – (\$250M)

Conservation partners have worked over the last several decades to protect more than 100,000 acres in Alabama’s coastal counties. Acquiring lands that protect the Gulf of Mexico’s critically important bays, estuaries, barrier islands and coastal rivers ultimately provides habitat for animals, plants and people, protects coastal communities during storm events, protects and

enhances coastal fisheries, and supports heritage-based tourism and recreational opportunities.

This project seeks to provide meaningful connections between conservation projects to provide habitat and migration corridors, as well as connect public lands across state borders along the Gulf Coast, including the Perdido River, Escatawpa River, Fort Morgan Peninsula, Grand Bay Savanna and Dauphin Island, among others. From coastal pine savannas, maritime forests and wetlands to beach dunes and coastal marshes, these habitats provide storm and flood protection for adjacent communities and protecting the values they provide are a strong, permanent investment in our future.

More than 130,000 acres have been identified for purchase and acquisition efforts are underway for several high-priority tracts that are currently available in these areas. This project aligns with goals in Alabama's Wildlife Action Plan and the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan. It will:

- provide coastal habitat protection for the Gulf of Mexico's critically important bays, estuaries, barrier islands and coastal rivers,
- buffer private and public properties, communities and infrastructure from erosion, storm surges and other coastal hazards, and
- provide new recreational and ecotourism opportunities.

FLOODPLAIN RESTORATION & WATER QUALITY IMPROVEMENT

1. D'Olive Bay Watershed Improvements – (\$150M)

**this project directly complements and links to the Mobile Bay Headwaters Project*

Since the 1970s, excessive erosion and sedimentation have plagued the D'Olive Watershed, a primary watershed feeding eastern Mobile Bay, and ongoing urban development continues to intensify these problems. Almost half of the streams in the watershed are or will soon be degraded, and five of the streams are listed on the Alabama Department of Environmental Management's 2010 303(d) impaired waters list.

In 2010, a broad-based coalition of federal, state and local stakeholders facilitated by the Mobile Bay National Estuary Program completed a comprehensive Watershed Management Plan. The Plan recommends improvements to the watershed that address historical and ongoing problems to prevent future stream and wetland degradation, reduce sediment transport downstream and improve water quality. Restoration of watershed hydrology through improved stormwater management is critical to eliminate the factors that have degraded the

watershed that feeds Mobile Bay.

This project aligns with the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan and will:

- restore and enhance degraded watershed habitats and water quality,
- provide management of stormwater for local communities, and
- support jobs during the multi-year construction period.

2. Mobile Bay Causeway – (\$80M)

**this project directly complements and links to the Mobile Causeway Project*

The Mobile-Tensaw Delta empties into Mobile Bay and is the terminus of the fourth largest watershed by volume in the continental United States, receiving 20 percent of our nation's freshwater supply from five major rivers. At the southern end of the Delta, a large dike-like causeway built in the late 1920s has sealed off a number of once open bays from immediate contact with the bay and Gulf, severing migratory fish routes, altering saltwater and freshwater exchange, disrupting natural sediment transport regimes, and impacting coastal marsh and seagrass that filter the water entering Mobile Bay, all of which are vitally important to the downstream bays and estuaries and the fish, shellfish and wildlife that depend on them.

The Delta's importance lies in this connection between the riverine and coastal ecosystems, and upstream and downstream modifications have altered its ecological productivity. This project will restore tidal exchange between the Delta and bay, opening migratory corridors for fish, turtles, waterfowl and other wildlife, reestablishing sediment transport and enhancing estuarine habitat. This project aligns with goals in Alabama's Wildlife Action Plan and the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan. It will:

- restore and enhance habitats adversely affected by impeded tidal exchange, benefitting near-shore, estuarine and listed species,
- enhance community resilience by restoring natural pathways for storm surges and flood waters, and
- support jobs during the multi-year construction period.

3. Mobile Bay Headwaters Conservation – (\$200M)

**this project directly complements and links to the D'Olive Bay Watershed and Alabama Coastal Forest Restoration and Alabama River Diadromous Fish Passage Projects*

The watershed and contributing rivers of the Mobile Basin transport and filter freshwater downstream to Mobile Bay, protect water recharge areas for municipal water supplies, and

provide migratory routes for terrestrial and aquatic wildlife. Likewise, the Conecuh-Escambia, Yellow, Choctawhatchee and other coastal rivers play the same role for other important Gulf estuaries, including Escambia Bay and Choctawhatchee Bay.

The predominant longleaf pine and hardwood forests are intermingled with pockets of other unique habitats, such as prairies, pitcher plant bogs, rock outcrops and caves. Collectively, this patchwork serves as nature's kidney by removing excess nutrients, sediments and other pollutants from water as it seeps into aquifers or travels downstream to the coast. This project targets acquisition, restoration and management of more than 250,000 acres in critical headwaters that feed the Gulf Coast.

This project aligns with goals in Alabama's Wildlife Action Plan and the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan. It will:

- protect the headwaters and improve water quality for the Gulf's critically important bays, estuaries and coastal rivers,
- work with private landowners along streams to stabilize riparian, floodplain and in-stream habitats, thus reducing erosion and sedimentation,
- propagate and reintroduce Alabama's unique aquatic life, including mussels which filter the water,
- improve the movement of fish and other aquatic life past dams and other obstacles,
- protect aquifer recharge areas that supply drinking water for local communities, and
- provide new recreational and ecotourism opportunities.

SHELL RECYCLING

1. Alabama Shell Recycling Program – (\$6.4M)

**this project directly complements and links to the 100-1000: Restore Coastal Alabama Project*

Despite significant loss of oyster reefs, Mobile Bay, with the fourth largest drainage basin in the United States, represents one of the largest areas for restoration, replacement and enhancement of this lost habitat due to the size of the estuary, historic distribution of oysters in the bay, high natural oyster spat sets and warm water for fast growth. The project will engage local businesses and the public in restoration through an oyster shell recycling program, serving as a nexus between education and restoration to create direct, tangible linkages between oyster restoration and local communities.

It will provide a mechanism to return shells that would have been discarded by restaurants, back to the water via restoration projects to provide additional substrate for larval settlement.

As important, it will raise awareness and engage the business community. This project aligns with goals in Alabama's Wildlife Action Plan and the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan. It will:

- recycle oyster shells discarded by businesses and the public for restoration projects that support the natural resources used by people, wildlife and fisheries,
- engage and raise awareness for businesses and the public about the connection between their food and the natural resources that support them,
- utilize this limited resource, which is currently being discarded, in a cost effective way,
- create business opportunities for private entrepreneurs, and
- reduce community risk to coastal hazards, such as storm surge and flooding through incorporation in the resultant reefs.

FOREST CONSERVATION & RESTORATION

1. Alabama Coastal Forest Restoration – (\$3M)

**this project directly complements and links to the Mobile Bay Headwaters Project*

By working with selected private landowners, managers and public partners on longleaf pine conservation and restoration strategies, large private forest ownerships will implement stewardship practices to improve land management activities that result in healthier systems across the watershed. Improvements will be achieved in the Perdido, Escatawpa and Mobile-Tensaw River habitats surrounding the headwater streams and rivers critical to the survival of healthy estuarine and marine systems, while maintaining land in private ownership.

Healthy, intact forests are important for preventing erosion, purifying water and otherwise protecting the water quality of rivers and streams that provide drinking water for local communities and ultimately feed the Gulf's estuaries.

This project aligns with goals in Alabama's Wildlife Action Plan, America's Longleaf Plan, the Northern Bobwhite Conservation Plan and the Mobile Bay National Estuary Program's Comprehensive Conservation Management Plan. It will:

- restore important headwater habitats, including tidal freshwater marshes, cypress-tupelo swamps, bottomland hardwood forests, longleaf pine forests, Atlantic white cedar swamps and pitcher plant bogs;
- preserve and conserve plants (such as pitcher plant bogs) and animals (such as gopher tortoises and black bear) that use these habitats as shelter, resting and forage areas;
- protect aquifer recharge areas that supply drinking water for local communities;

- create multiple full time, seasonal and contract positions for restoration and management activities; and
- provide economic benefits for local businesses through riparian restoration, invasive species control and silviculture.

DIADROMOUS FISH MIGRATION RESTORATION

1. Alabama River Diadromous Fish Passage – (\$1.5M)

**this project directly complements and links to the Mobile Bay Headwaters Project*

In collaboration with the U.S. Army Corps of Engineers and several other agencies and partners, lock operations on the two lowermost dams on the Alabama River, installed around 1970, will be modified to improve the passage of migratory fish across approximately 400 river miles. Structural and operational modifications at Claiborne Lock and Dam and Millers Ferry Lock and Dam have the potential to benefit more than 50 species of fish that migrate between freshwater and saltwater, numerous mussel species and overall ecosystem health, stretching from the Gulf of Mexico, across Mobile Bay, through the Alabama River and reaching upstream to the free-flowing Cahaba River.

This project aligns with goals in Alabama’s Wildlife Action Plan and will:

- restore and rehabilitate connectivity between riverine habitats and estuarine habitats, especially for diadromous fish, such as the Alabama shad and federally threatened Gulf sturgeon,
- restore and enhance impacted, degraded and lost riverine habitat and estuarine and freshwater fisheries, and
- provide feasible restoration for more than 400 river miles using low cost techniques.



Florida Projects

- Near-Shore Habitat Restoration
- Near-Shore Land Protection
- Water Quality Restoration
- Forest Conservation & Restoration

FLORIDA

Florida is of major economic importance to the Gulf Coast, especially in terms of supporting commercial and recreational fisheries, as well as tourism, agriculture and recreation industries. The 7.8 million people that reside in Florida's 23 Gulf Coast counties represent 37 percent of the total population of the Gulf's Coastal Counties. The well-being of these economies and communities depends on protecting and conserving the integrity of the Gulf's natural habitats, including coral and oyster reefs, beaches, estuaries and forests. The natural and developed lands along the coast are highly vulnerable to the effects of storms, sea-level rise and other stresses that in turn affect the state's economic, ecological and cultural resilience and prosperity. Conserving the Gulf Coast's natural resources and coastal communities requires protecting and restoring the health of its riverine and estuarine habitats and the upland and wetland systems that ultimately benefit the Gulf's water quality, habitats, species, and support time-honored ways of life.

FOREST CONSERVATION/RESTORATION AND LAND ACQUISITION (7 projects)

The following are descriptions of seven high priority land protection projects located in the Northwest region of Florida. The estimated costs for each include a 20 percent increase above acquisition cost to assist with habitat restoration activities that includes restoration needs assessment and planning, prescribed fire, ground cover restoration and non-native invasive species control. The projects offer benefits that, individually and collectively, include increased protection of Florida's biodiversity, the protection, restoration and maintenance of the quality and natural functions of Florida land, water and wetland ecosystems, and ensure that sufficient quantities of water are available to meet the current and future needs of natural ecosystems — including estuaries—and the public.

The lands within the seven projects total more than 412,000 acres. Together with surrounding and adjacent lands already managed for conservation and public use, these projects will provide significant protection at a landscape-scale to more than 1.1 million acres of public and private natural areas. Such an interconnected system of managed landscapes and watersheds will provide critical habitat for wide-ranging vertebrate species such as the Florida black bear and numerous waterfowl and other migratory bird species, as well as provide tremendous ecosystem resiliency. Importantly, the region represents the largest, contiguous landscape-level longleaf pine system surviving in the world.

The project's lands serve as primary watersheds that feed into several estuarine systems—Apalachee Bay, Apalachicola Bay, St. Vincent Sound, Lake Wimico and St. Joseph Bay that are

critically important to the Gulf's seafood and tourism industries. These include four State Aquatic Preserves that protect more than 1.1 million acres of Gulf waters—St Joseph Bay, Apalachicola (also designated a National Estuarine Research Reserve), Alligator Harbor and the Big Bend Seagrasses. Six of the projects—Flint Rock, St. Vincent Sound-to-Lake Wimico Ecosystem, St James Island, Bear Creek Forest, Wolfe Creek Forest and the Aucilla River Tract—target restoration of historic longleaf pine communities.

These lands are now in commercial silviculture timber operations and currently allow run-off of surface water that carries fertilizer, herbicides and pesticides into the rivers and estuaries. With thinning, replanting of longleaf pine, introduction of prescribed fire, and sustainable forestry management practices that convert much of the project areas back to historically occurring longleaf pine, the projects could be transformed from management for silviculture to areas managed for ecological, hydrological and recreational benefits thereby increasing the region's overall resilience to future natural and human-made disasters.

The rivers along the eastern Gulf of Mexico Coast, including drainages in Alabama, Mississippi and the Florida Panhandle, are globally outstanding centers of freshwater biodiversity that feed significant estuarine systems. The World Wildlife Fund recognizes these freshwater ecosystems as being among the richest in the world. The Conservancy's freshwater ecologists classify the Mobile, Pascagoula, Perdido, Blackwater, Yellow, Chipola and Apalachicola rivers as highest priority for this region and for supporting the Gulf of Mexico.

Collectively, these rivers contain part of the largest remaining intact forest type on the Southeast U.S. coastal plain—the Bottomland Forest natural community—that protects the ecological function and structure of rivers and are indicators of the hydrologic function of the river system. These Bottomland Forest communities provide vital habitat for many, rare wide-ranging, large-area-requiring species such as black bear and swallow-tailed kite and are a natural source of nutrients for the productive estuaries which they feed.

Estuaries are the economic lifeblood of the region and the underpinnings of the ecology of the near-shore Gulf. Estuarine habitats such as salt marsh, oyster reefs and seagrasses support recreationally and commercially important finfish (e.g., speckled sea trout, redfish, black drum, snapper, grouper, mullet) and shellfish (e.g., oysters, pink shrimp, scallops, blue crabs, stone crabs) that are the foundation of a thriving seafood industry in the region and throughout the Gulf. The projects will help:

- to restore, recover and expand the impacted economy of Florida's Gulf communities by protecting a sustainable system of lands and waters that will stabilize, maintain and enhance the commercial seafood industry and tourism, including sport fishing,

ecotourism and public access to conservation lands for recreation and wildlife viewing opportunities in the region.

- Additionally, protecting and restoring these lands and waters will help preserve their integrity, increasing the Gulf's resilience to future natural and human-made disasters throughout the region.

1. Flint Rock (Jefferson and Wakulla counties, FL) – (\$33M)

The project is located in Jefferson and Wakulla counties, Florida, and is contiguous with the St. Marks National Wildlife Refuge. The project will transfer 17,273 acres of forested upland and wetland communities into state or federal ownership. These lands are important to conserving the natural habitats, species and watershed of the St. Marks National Wildlife Refuge, Apalachee Bay and the Big Bend Seagrasses Aquatic Preserve. The lands in the project are currently available for acquisition making the project feasible and the likelihood of success high. The lands are within the St. Marks National Wildlife Refuge's approved acquisition Boundary Expansion and support numerous rare and imperiled species.

2. St. Vincent Sound-to-Lake Wimico Ecosystem (Franklin and Gulf counties, FL) – (\$453M)

The project proposes to acquire and restore nearly 220,033 acres of terrestrial and wetland natural communities that currently protect freshwater flows and buffer high quality estuarine habitats along Florida's Panhandle. Protecting more than 11 and a half miles of direct estuarine and Gulf of Mexico shoreline, the project is important for protection of freshwater, wetland and forest habitats and species including the Florida black bear, overwintering waterfowl, Neotropical migratory avifauna, recreationally and commercially important fish species, oysters, crab and shrimp. The project serves as a primary watershed that feeds into the Apalachicola Bay, St. Vincent Sound, Lake Wimico and St. Joseph Bay. The project is widely recognized as one of the most important areas in Florida for biodiversity and rare species conservation efforts.

3. St. James Island (Franklin County, FL) – (\$77M)

The project will acquire and restore 19,588 acres of forested upland and wetland communities into state or federal ownership. The lands buffer and are contiguous with the southwestern edge of St. Marks National Wildlife Refuge and serve as a significant connector between the Tate's Hell State Forest, Bald Point State Park, Alligator Harbor Aquatic Preserve and Ochlockonee Bay which is particularly important for the local population of Florida black bear. Restoring uplands will protect the quality of freshwater entering the highly productive waters

of the Gulf, including three State of Florida Aquatic Preserves—Apalachicola Bay, Alligator Bay and Big Bend Seagrasses. This project is under a high threat for potential development.

4. Bear Creek Forest (Bay, Calhoun and Gulf counties, FL) – (\$165M)

The project consists of 100,424 acres in Calhoun, Bay and Gulf counties, Florida. The landscape consists of mostly off-site pine plantations interspersed with disturbed wet prairies and forested wetlands, as well as several upland forest types. Protection and restoration of the project is needed to maintain clean and unrestricted freshwater flows to several estuarine systems along Florida’s Panhandle. Although located inland, the basically flat lands of the project support many bottomland forests that drain into a complex system of tributary streams flowing into the St. Andrew Bay watershed and the Chipola River—the latter a major tributary of the Apalachicola River and hence Apalachicola Bay. St. Andrew Bay is unique in the Panhandle of Florida because it is the only estuarine system whose entire basin is located within the boundaries of the State of Florida. It also is one of the most diverse estuaries in America, with more than 2,900 species. Acquisition of the project would help establish a proposed system of natural areas forming a significant corridor connecting State and Federal conservation lands in the central Florida Panhandle. The project is near a major urban area, Panama City (and just six miles north of Tyndall Air Force Base), a large population center that would benefit in terms of water supply and recreation from the project’s protection and restoration.

5. Wolfe Creek Forest (Santa Rosa County, FL) – (\$19.3M)

The project encompasses 10,075 acres and connects Blackwater River State Forest (BRSF) to the east and Whiting Field Naval Air Station to the southwest. The project is part of a long-standing landscape-scale and watershed-based acquisition and restoration project seeking to connect the 189,594-acre BRSF, the 464,000-acre Eglin Air Force Base, and the 83,898-acre Conecuh National Forest in adjacent Alabama, and several smaller conservation lands. Conservation of lands within the project would afford protection to numerous seepage and blackwater stream systems that are tributaries of the Blackwater River. Big Coldwater Creek is one of the most ecologically significant, scenic and highly popular canoeing and kayaking creeks in all of Florida and is a major tributary of the Blackwater River, which itself feeds into the estuarine system of Blackwater Bay—an Outstanding Florida Water—that sustains important fisheries in the region. Data from the Florida Natural Areas Inventory show that Big Coldwater Creek and Wolfe Creek are identified as Priority 1 Wetlands Protection Priorities by the State of Florida. By extending and buffering existing managed areas in the region, the project enhances management of the

series of public lands and waters—including protection of the vital military mission at Whiting Field.

6. Aucilla River Tract (Jefferson County, FL) – (\$26.4M)

The 16,000 Aucilla River project is located along the eastern bank of the Wacissa River with its spring-fed, crystal clear waters, just west of where the tannin-stained waters of the Aucilla River intermittently disappear and reappear as they flow through a complex series of sinkholes and subterranean passages. Both rivers flow through deep cypress- and hardwood-dominated swamps before they join and eventually flow into the Gulf of Mexico along the productive Apalachee Bay. The project will help buffer and protect both these rivers by maintaining their water quality, protecting aquatic caves and sinkholes, preserving important archaeological sites (e.g., 12,000-year-old mastodon tusks from the Aucilla are the oldest evidence of butchering in North America), as well as enhancing public opportunities for recreation. The project will help form an enhanced connection to the St. Marks National Wildlife Refuge and a variety of other state- and private-owned lands to help ensure that a connection is maintained to facilitate the migration of species and natural communities in response to sea-level rise.

7. La Floresta Perdida (Escambia County, FL) – (\$101.2M)

The 46,135-acre La Floresta Perdida project in northwestern Escambia County represents an outstanding timber and riverine tract. The rolling topography of this inland tract has substantial frontage along the eastern bank of the Perdido River and supports vast acreages of long-rotation longleaf pine forests (as well as plantations of off-site species), rare seepage slope natural communities supporting pitcher plants, numerous creek drainages and other landscape-scale and Gulf of Mexico watershed features. These make the project extremely desirable for protecting the downstream estuarine and Gulf ecosystems. Coupled with ongoing efforts in Alabama on the western bank of the Perdido River, there is an opportunity to protect a large portion of the entire upper- and mid-section of the Perdido River thereby maintaining water quality, quantity and seasonal timing of the flows of this significant riverine system and its freshwater inputs, which are necessary to the proper functioning and structure of the Gulf and associated estuarine and marine systems.

Restoring Healthy Ecosystems

FLORIDA PANHANDLE RESTORATION

1. Apalachicola Regional Stewardship Alliance – Ecosystem Restoration Team (\$35.2M)

The project area is centered in the Florida Panhandle stretching from Walton Co. eastward to Jefferson County. The Apalachicola Regional Stewardship Alliance (ARSA), formally organized via formal Memorandum of Understanding since 2010, is a collaborative partnership (federal/state agencies, academia, organizations, corporations and non-profits) that represents more than 1 million acres of public and private conservation and working forestland. The key function of ARSA is to provide a mechanism for the seamless sharing of restoration tools, staffing and experience among all private and public partners.

The ARSA Ecosystem Restoration Team (ERT) currently provides “on the ground” land restoration and management expertise for upland and wetland habitats (salt marsh to longleaf pine) to all partners. Currently there is not a dedicated source of funding to support the natural community restoration and management activities (e.g. prescribed fire assistance and training and non-native invasive species control) needed to ensure long-term security and resilience of these lands. Funding would be used to permanently fund an expanded version of the current ERT. This increase in capacity would secure management and restoration support for both the existing and newly protected conservation areas, as well as provide for the new activities associated with National Environmental Policy Act (NEPA) fieldwork/analysis and the Stewardship Contracting. The ARSA ERT will continue to cooperate with and assist the sister team to the west—the Gulf Coastal Plain Ecosystem Partnership Ecosystem Support Team. While this project will restore and increase resilience of thousands of acres of natural habitat that will benefit a myriad of plant and animal species, it will also:

- advance local municipalities by reducing fuel loads that could lead to dangerous wildfires,
- improve water quality,
- create jobs by way of stewardship contracting and NEPA project streamlining,
- enhance local economies by supporting recreational fishing, hunting and ecotourism,
- improve quality of life and visitor experience, and
- serve as a model for coordinated large-scale habitat restoration among numerous partners that could be replicated across the Gulf, integrating the needs of restoration for terrestrial, freshwater and marine systems.

LIVING SHORELINE AND OYSTER HABITAT RESTORATION

1. Pensacola Bay Living Shoreline and Oyster Habitat Restoration – (\$16.7M)

The project is located in the East and Blackwater Bays, embayments within the Pensacola Bay system in Santa Rosa County. As a collaborative effort with The Nature Conservancy, Florida

Department of Environmental Protection, Dauphin Island Sea Lab, and Florida SeaGrant, the project will result in the creation of up to eight miles of non-contiguous living shoreline/oyster breakwater habitat and restoration of salt marsh habitat. The goals are to create a living shoreline that serves as a natural approach to help prevent shoreline erosion, increase oyster habitat and the amount of habitat available for recreationally and commercially important shellfish and finfish, and promote the growth of submerged aquatic vegetation.

The Panhandle/West Florida is an economically important region in the Gulf of Mexico, especially in terms of supporting the commercial and recreational fisheries and watchable wildlife (tourism) industries. Tourism is Florida's largest industry. In 2011 it accounted for \$85.1 million in value with more than 1 million people directly employed in the industry. In 2010 it generated \$4 billion in sales tax revenue (Visit Florida, 2012).

While this project will enhance a suite of fish and wildlife populations and their supporting habitats, it will also provide benefits to the public through:

- enhanced fisheries that can feed the coastal economy,
- stabilized shorelines which improve water quality,
- protected private and public properties and important cultural and historical resources,
- improved coastal community resilience, and
- improved quality of life with a healthy environment.

2. Restoration and Mapping of Oyster Reef Habitat in Southwest Florida – (\$24.7M)

The project is a partnership with The Nature Conservancy, Florida Gulf Coast University, Sanibel-Captiva Conservation Foundation, Charlotte Harbor-Tampa Bay-Sarasota Bay National Estuary Programs, and the partners of the Southwest Florida Oyster Working Group. The purposes of this project are to: 1) map inter- and sub-tidal oysters from Pinellas County south to Lee County; and 2) implement and monitor restoration of approximately 18 acres of oyster habitat within the Charlotte Harbor estuary based on recommendations from the consensus-based Charlotte Harbor National Estuary Program Oyster Habitat Restoration Plan (2012).

A science-based habitat suitability model developed specifically for the Charlotte Harbor region identified areas appropriate for oyster habitat restoration. Estuarine segments in the Tampa Bay and Sarasota Bay estuaries may be targeted for oyster habitat restoration if the mapping phase identifies areas of critical need or optimal locations with high likelihood of success.

Direct creation of oyster habitat within these estuaries increases oyster density and provides habitat for a variety of commercially and recreationally important species. Seagrass may also

benefit from restoration of oyster habitat. Protecting and restoring oyster reefs provides benefits to the public by:

- reducing the vulnerability of human communities to the impacts of coastal hazards, such as storm surge and flooding.
- This project will help bolster the local economies through the creation of jobs and supporting natural resource livelihoods, as well as sustaining tourism and other coastal businesses.
- The proposed project would create or preserve an estimated 323 jobs over the eight-year life of the project.

3. Restoration of Florida's Big Bend Oyster Reefs – (\$1.4M)

The project is a partnership led by the University of Florida with The Nature Conservancy, Florida SeaGrant, Big Bend Oyster Working Group, Cedar Key Aquaculture Association, local fishermen and the community of Cedar Key. Our project seeks to 1) establish reefs in areas less susceptible to high salinity events, and 2) offer more stable substrate that can be recolonized following high mortality events. Restoration activities involve reconstruction of reefs using donated, bagged live oysters, and will foster community support through local employment, collaboration, and volunteer opportunities.

The short-term restoration goal is to create self-sustaining oyster reefs that maintain or increase area, species composition, size distribution of oysters and proportion live oysters in the face of normal freshwater pulses and storm events. The long-term restoration goal is to create reef systems that are largely resilient to anticipated threats, including sea-level rise, low freshwater events, drought, human over-use of freshwater, and increased variability in weather.

Restoration of oyster reefs result in:

- wave abatement and significant reductions in shoreline erosion.
- Providing an important alternative income in the Cedar Key community, especially during times when other fishing resources are not available.
- Creation of 26 high quality subtidal oyster sites will enhance fishable oyster resources.
- Enhancement of sport fishing, both through direct restoration of reefs and adjacent habitats such as salt marsh, and through directing the flow of freshwater from the Suwanee River system that benefits a much larger area of reefs.
- Development of oyster reef restoration methods using locally sourced materials is likely to lead to economically viable aquaculture of oysters over a much larger area as well as diversifying the jobs for the Cedar Key community.

ESSENTIAL FISH HABITAT RESTORATION

1. Rattlesnake Bluff Road and Riverbank Restoration Project, FL – (\$3M)

The Nature Conservancy, Department of Defense—U.S. Air Force Base and U.S. Army, U.S. Fish and Wildlife Service, and Florida Fish and Wildlife Conservation Commission are partners on this project. The objective of this project is to stabilize Rattlesnake Bluff Road and nearby eroded riverbank sites in order to reduce sediment pollution to the Yellow River and Pensacola Bay and provide a safe, reliable thoroughfare for the public. The project helps restore the estuarine habitats of the State of Florida’s Yellow River Wildlife Management Area (29,000 a.), Yellow River Marsh Aquatic Preserve (16,000 a.), and Yellow River Marsh State Park, as well as lands and waters within the boundaries of the U.S. Department of Defense’s Eglin Air Force Base and complements the proposed Pensacola Bay Living Shoreline and Oyster Reef Restoration project (as described earlier).

This project will benefit the environment and the public by:

- restoring approximately 15 miles of road and 25 miles of river and tributary habitats,
- improving the populations and stability of riverine biota, including state and federally protected species such as the Gulf Sturgeon,
- reducing sediment pollution to the Yellow River and Pensacola Bay,
- improving water quality and clarity by reducing suspended solids, and
- providing a stable and reliable road to local communities and the general public.
- Reduced sediment pollution and improved habitat will further restore and/or improve estuarine habitats such as oyster reefs and salt marsh, which support the area’s fishery, state park, and other public resources contributing millions of dollars to the local and state economy.
- In addition to improving long-term public safety and access to fish and fishing, the restoration and rehabilitation of Rattlesnake Bluff Road is expected to directly employ approximately 20 people in full or part-time construction work.

CORAL REEF RESTORATION

1. Restoring Threatened Corals to Enhance Reef Functions, Fisheries Habitat and Tourism Opportunities in the Florida Keys – (\$25M)

Staghorn and elkhorn coral restoration efforts in the Florida Keys National Marine Sanctuary and Dry Tortugas National Park have been expanding for the last ten years. In 2009 they were

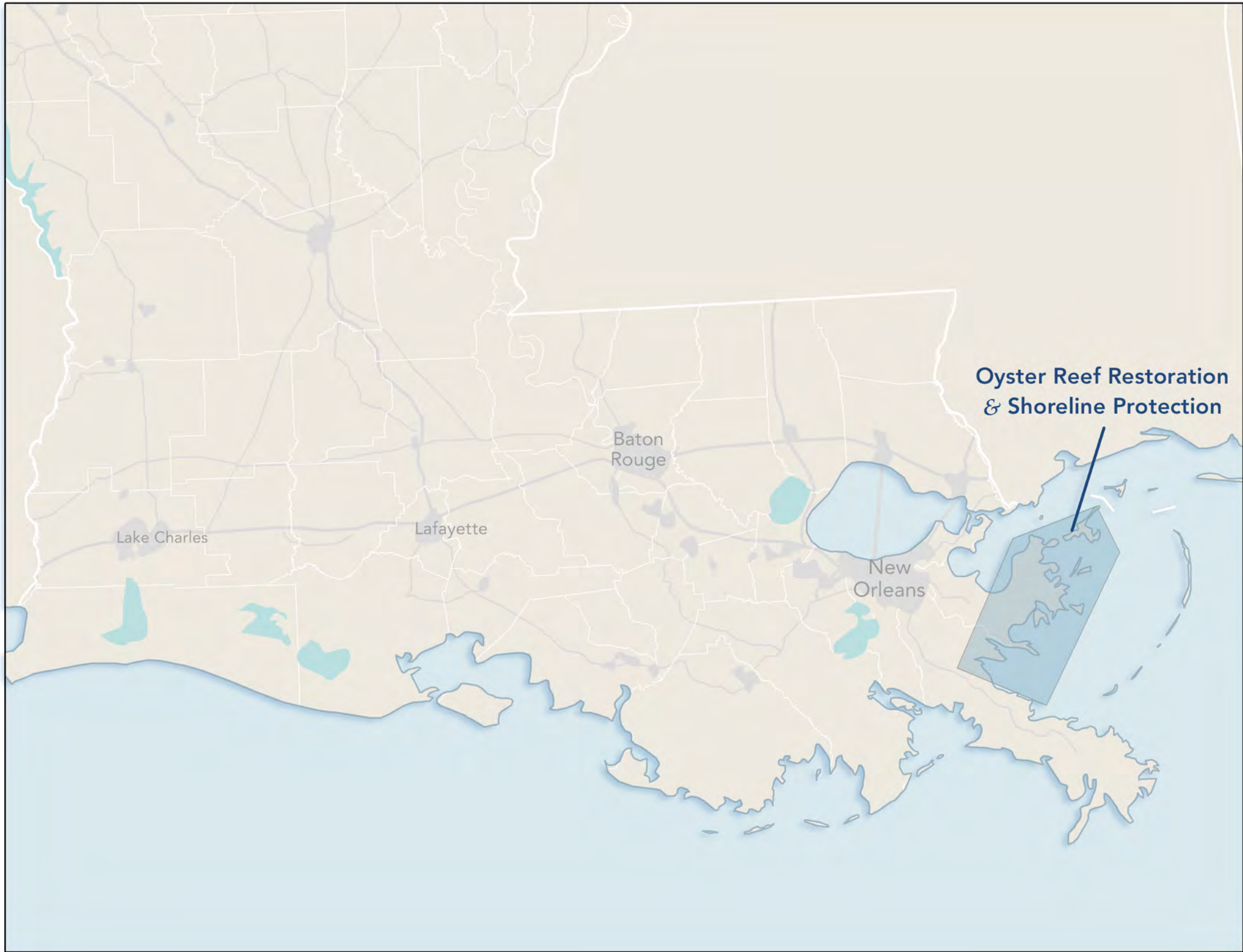
significantly scaled-up with American Recovery and Reinvestment Act funding administered by the National Oceanic and Atmospheric Administration and U.S. National Park Service funding. More than 30,000 corals are currently staged in undersea nurseries spread throughout the region. The Nature Conservancy and project partners — Coral Restoration Foundation, Mote Marine Laboratory and Florida Fish and Wildlife Research Institute — are prepared to continue nursery propagation and outplant a minimum of 14,000 colonies per year for ten years to permitted restoration sites on degraded coral reefs in the Keys and Dry Tortugas.

This project will contribute significantly to recovery of the federally listed staghorn and elkhorn corals and restoration of the ecological and economic viability of the Gulf of Mexico's largest, most heavily used coral reefs. These corals contribute significantly to reef growth and island formation. The massive reefs they create protect the Keys' low-lying natural areas and vulnerable coastal communities from storm waves and erosion during hurricanes and other severe weather.

More than any other Atlantic corals, staghorn and elkhorn create structurally complex habitat on the seafloor that is vital to many commercially and recreationally important species including snappers, groupers and spiny lobster. They are also home to the colorful tropical fish and invertebrates that attract divers and snorkelers from around the world to the tourism-dependent Florida Keys.

The *Florida Keys National Marine Sanctuaries Socioeconomics Fact Sheet* reports that:

- more than 33,000 jobs in the Florida Keys are supported by ocean recreation and tourism, accounting for 58 percent of the local economy and \$2.3 billion in annual sales.
- From 2007 to 2008, more than 400,000 visitors and residents of the Florida Keys engaged in more than 2 million person-days of recreational sports fishing. These recreational fishers spent \$262 million in Monroe County/Florida Keys, approximately \$103 million of which was directly spent on fishing items.
- Approximately 739,000 visitors and residents participated in 2.8 million days of diving in the Florida Keys between 2007 and 2008; \$51.7 million was spent at diving/snorkeling operations. Moreover, divers spent a total of \$450 million in Monroe County, Florida Keys, supporting more than 7,500 jobs.
- In 1995, it was estimated that fishermen received \$56.5 million in harvest revenue, which generated \$92.2 million in sales/output in Monroe County, or about 4.5 percent of the total economy in 1995. This sales/output generated more than \$58 million in income and 4,130 jobs, 8.8 percent of all Monroe County employment.



**Oyster Reef Restoration
& Shoreline Protection**

Lake Charles

Lafayette

Baton
Rouge

New
Orleans

LOUISIANA

Louisiana is experiencing more coastal land loss than any other state in the Gulf of Mexico. The primary cause is the loss of sediment and freshwater input from the Mississippi River. This land loss, coupled with other threats such as sea-level rise, subsidence and a significant reduction in native coastal habitats, creates challenges for the people of Louisiana's Gulf Coast.

To address these challenges, the Louisiana Legislature approved and adopted the State's 2012 Coastal Master Plan, which provides a comprehensive, long-term restoration strategy for Louisiana's coast. The Master Plan will guide the State's coastal investments for the next 50 years, and proposes a total of \$50 billion in flood protection and ecosystem restoration projects.

The Conservancy has been heavily involved in the development of the State's Master Plan, and fully supports the implementation of the Plan. In addition to the project described below, we strongly support directing oil spill penalty dollars toward the construction of the large-scale river diversions proposed in the 2012 Master Plan. The restoration of sediment supply, via river diversions, to Louisiana's coastal marshes is essential to balancing erosion with accretion and can also moderate salinity impacts to these same marshes. Restoring the flow of sediment and fresh water is also critical to and complementary with many other restoration efforts in the state.

The restoration of near-shore habitat, in particular native oyster reefs, directly complements other restoration efforts such as diversions because it helps protect existing coastlines, while diversions help create new land. The near-shore habitat restoration projects described below are fully consistent with, and complementary to, the State's Master Plan, which calls for the "establishment of bioengineered oyster reefs to improve oyster propagation and serve as breakwaters to attenuate wave energies".

Restoration projects to improve coastal resilience and overall health of the Gulf of Mexico.

NEAR-SHORE HABITAT RESTORATION

1. Oyster Reef Restoration/Shoreline Protection, St. Bernard Parish – (\$27.5M)

The Conservancy is conducting oyster reef restoration in all five Gulf states. These efforts act to slow or reverse the rates of shoreline erosion by: reducing wave energy, improving water quality through increased filtration capacity, creating structural habitat for ecologically and

economically important fish and crustacean species, and allowing sediments to accumulate by slowing the velocity of the current and returning oysters to areas in which they have been lost or considerably reduced. Oyster habitat restoration also protects shorelines where human communities have invested in property and infrastructure.

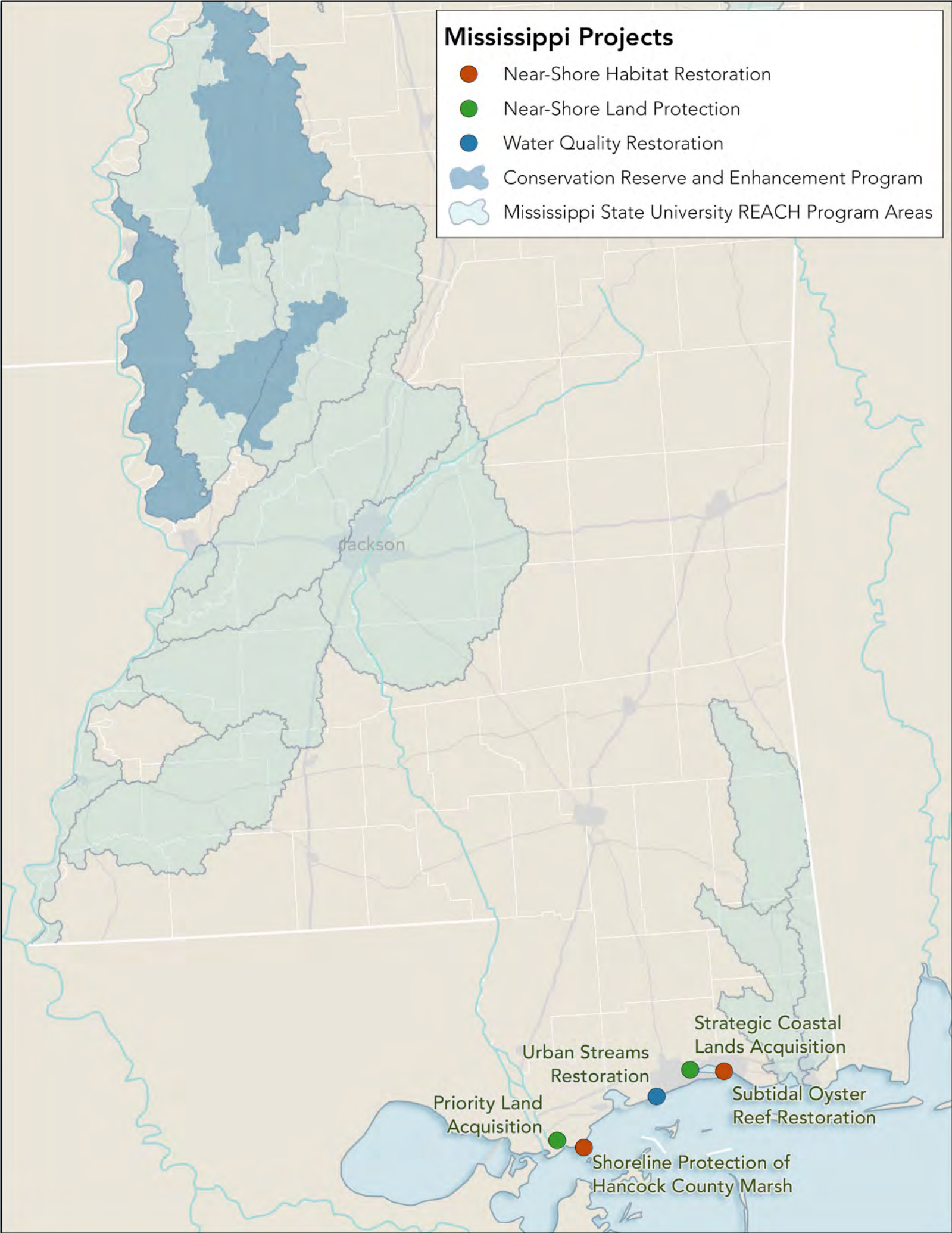
The most critically eroding area of Louisiana's coast is St. Bernard Parish. The Conservancy has already placed nearly 2.5 miles of artificial oyster reef there, and proposes an additional 25 miles. In Louisiana, the Conservancy has used Reefblk® and OysterBreak® technologies, and would consider others. The project itself will consist of placing constructed oyster reef where both the water salinities required to support oyster growth and the need to abate coastal erosion are in common.

Reef structures will be placed parallel to the shoreline to reduce wave energy reaching the shoreline, thereby reducing erosion. Costs include permitting and geotechnical work, the fabrication and installation of reef structures, and five years of monitoring and project management. Coastal landowners adjacent to our existing projects have been supportive as these projects protect their property. This project can provide the following benefits:

- **Enhance fisheries.** Many of the coastal waters of St. Bernard Parish are privately leased to commercial oyster production, and the successful restoration of oyster habitat can increase the amount of oyster larvae that find their way to these leases; possibly increasing production of the fishery.
- **Protect vulnerable coastlines.** The reestablishment of oyster habitat with a strong vertical component allows the continued growth of oysters to track incremental changes in sea-level rise or subsidence.
- **Save dollars.** Successful oyster habitat restoration is a technology that appreciates with time (oysters continue to grow) and requires little to no maintenance compared with some shoreline armoring projects.
- **Create and maintain jobs.** A previous oyster habitat restoration project conducted by the Conservancy in southeast Louisiana not only put 3.4 miles of reef structure along its shoreline, but also maintained or created 93 jobs. The restoration economy is not only important for generating local employment, but creates more ownership for those who live in places where coastal restoration is needed.

Mississippi Projects

- Near-Shore Habitat Restoration
- Near-Shore Land Protection
- Water Quality Restoration
- Conservation Reserve and Enhancement Program
- Mississippi State University REACH Program Areas



Jackson

Priority Land Acquisition

Urban Streams Restoration

Shoreline Protection of Hancock County Marsh

Strategic Coastal Lands Acquisition

Subtidal Oyster Reef Restoration

MISSISSIPPI

Successful and lasting restoration of Mississippi's coastal ecosystems needs to address issues around water quality and clarity, incompatible land use, habitat loss and fragmentation, invasive species and land management, as well as exacerbation of these ongoing challenges by sea-level rise and tropical storms. Restoration and protection of critical habitats is an essential part of the long-term sustainable management of resources that are needed for clean water, fisheries, tourism, biodiversity and the quality of life of Gulf citizens. The following projects seek to address the most pressing issues and though they are designed to be implemented in Mississippi, they also contribute to the improvement of the health and resilience of coastal communities across the Gulf. These projects will help to create habitat connectivity, improve water quality, and work to ensure more resilient biological and human communities.

NEAR-SHORE HABITAT RESTORATION

1. Subtidal oyster reef restoration – (\$23M)

Mississippi's coastal bays historically (circa 1890) held several thousand acres of oyster reef that provided important ecosystem services (water filtration, biodiversity/habitat, wave attenuation, sediment sequestration, etc.), and also supported a robust oyster fishing industry. Over the last century unsustainable fishing practices, shell extraction, water quality degradation, and incompatible land use practices on the nearby mainland have led to significant declines in the oyster harvest as well as a loss of benefits oyster reefs provide far beyond food.

In recent decades, the Mississippi Department of Marine Resources (MDMR) has been successful in managing a sustainable commercial oyster harvest. Although this has been an important success, commercially harvested oyster reefs do not maintain the same level of biomass that a large and complex three-dimensional reef structure holds. In fact, Mississippi only holds 8 percent of the oyster reef biomass that was historically present. (Ermgassen 2012). This biomass directly affects the amount of habitat available for fisheries, the capacity of the oyster reef to filter water, and the effectiveness of wave attenuation and sediment sequestration (preventing erosion and rebuilding marshes).

In an effort to restore lost habitat and ecosystem services, the Conservancy and the MDMR have partnered on six subtidal oyster reef restoration projects since 2004 totaling approximately 65 acres. Building upon these projects' successes, we propose to expand the

scope of this restoration to include up to 600 acres of oyster reef restoration. This restoration would be sited in portions of Biloxi Bay that historically supported oyster reefs and would be closed to commercial harvest, so the reefs can grow into three-dimensional habitats. New subtidal reefs will be constructed using natural oyster shell or other appropriate natural materials. Restored subtidal reefs improve water quality, create fish and wildlife habitat, slow coastal erosion and attenuate wave energy help protect coasts from storm surge.

Project benefits:

- This project will create short-term economic benefits through restoration job creation.
- Long-term benefits include enhanced habitat for important commercial and recreation species (fish, shrimp, and crabs), and improving future prospects for traditional industries such as commercial fishing, charter boat fishing, and seafood processing.
- While these oyster beds will not be open to harvest, they will provide brood stock for nearby harvestable reefs and will provide refuge and forage habitat for migratory finfish species of recreational and commercial importance.

2. Shoreline protection and stabilization of the Hancock County Marsh Preserve – (\$15.5M)

The Conservancy will work with the Mississippi Department of Marine Resources (MDMR) and the Mississippi Secretary of State to construct living shorelines along 11 miles of eroding coastal marsh in Hancock County, MS. The project will be sited along The Hancock County Marsh Preserve, state land protected as part of Mississippi's Coastal Preserve Program. This is the second largest state managed coastal preserve with 13,000 acres. Most of the preserved property is estuarine marsh, a habitat that has been classified as "imperiled" within the state's Comprehensive Wildlife Management Plan.

Mississippi's estuarine marshes are important for fish diversity, water quality and clarity, sediment trapping, and providing valuable nursery habitat as well as reducing erosion caused by waves. Over the last 50 years, up to 376 acres of habitat have been lost due to coastal erosion in this area. By utilizing "living shoreline" restoration techniques, such as restored intertidal reefs, the Conservancy and partners will stabilize the eroding shoreline while increasing its overall function and the benefits healthy shorelines provide, including helping protect communities from storm surge and sea-level rise.

Healthy marshes are nursery habitat for important commercial and recreational species, including red drum, spotted sea trout, flounder, shrimp and crabs, and will enhance the future of these species and the commercial and recreational fishing industries dependent on them, preserving traditional industries and the lifestyles related to them.

- The construction of oyster-based living shorelines will improve water quality and protect important coastal salt marsh from erosion and storm surge.
- Similar restoration projects—notably in Louisiana and Alabama—have also directly contributed to local economies by creating jobs in restoration, in addition to improving habitat that helps support traditional industries, such as fishing and tourism.

3. Implementation of living shorelines for shoreline protection and stabilization on private lands and previously hardened shorelines – (\$41M)

As in most coastal communities, many Mississippi landowners armor their coastlines using structures such as seawalls and bulkheads to prevent erosion and property damage. These structures have a number of unintended consequences: they destroy coastal habitats including marsh shorelines and natural beaches. They also create a cycle by speeding up erosion on adjoining tracts, which in turn results in further shoreline hardening. In addition to contributing to erosion, hardened shorelines also eliminate the potential for inshore habitat migration in the face of projected sea-level rise.

The Conservancy will work with natural resource agencies, cities and private landowners to promote and construct living shoreline structures as an alternative to sea walls and jetties and other hardened structures to protect private shoreline lands.

Project benefits:

- This project will protect natural habitats while still protecting private property.
- Shoreline resilience will be improved, fish, invertebrate, and bird habitat will be protected and enhanced, and scenic vistas will be preserved. As with shoreline stabilization on public lands, these projects will enhance fisheries habitat and help to insure the future of commercial and recreational fisheries.
- Naturally stabilized shorelines will help attenuate storm surge and allow for inshore habitat migration.
- In the short term, shoreline stabilization will create construction jobs and teach contractors new techniques that are transferrable to other projects and places.

LAND ACQUISITION

1. Acquisition and management of priority lands within the Mississippi Coastal Preserves Program – (\$150M)

Mississippi's Coastal Preserve Program currently protects more than 30,000 acres of estuarine marsh, coastal wetlands, and maritime forest as public wildlife habitat and recreation lands. These lands are owned by the Mississippi Secretary of State (MSOS) and managed by the Mississippi Department of Marine Resources. An additional 40,000 acres of land remains eligible to be included in the popular Coastal Preserves Program. Working with the MSOS, the Conservancy has identified and prioritized these remaining lands based on habitat connectivity, type and quality.

The Conservancy proposes to acquire up to 20,000 acres of land that will be placed into the Coastal Preserves Program. Additionally, in order to manage these lands into the future, a management endowment will be established to pay out 20 percent of the lands' assessed value, per Conservancy recommended practices.

- Preserved and well-managed coastal lands provide wildlife and nursery habitat for commercial and recreational fishery species, including shrimp, finfish, and crabs, enhancing conditions for these species and traditional industries, such as commercial fishing, seafood processing, and charter boat fishing, which are based on them.
- They also provide vital stopover habitat for neotropical migratory birds.
- Intact coastal marshes protect natural lands and human structures from storm surge and wind damage, potentially reducing insurance costs. Finally, they enhance quality of life by protecting scenic vistas and providing access to opportunities for traditional outdoor recreation.

2. Protection and Preservation of Strategic Coastal Lands – (\$32M)

Besides the Mississippi Coastal Preserves Program, other agencies such as Mississippi State Wildlife Fisheries and Parks, U.S. Department of Interior, U.S. Department of Agriculture, and several non-profit organizations also work in land conservation along the Mississippi Coast. With a goal of protecting an additional 20,000 acres, strategic land acquisitions will target coastal properties that add to and buffer lands owned by the Conservancy, the Mississippi Department of Wildlife, Fisheries, and Parks, the National Park Service, the U.S. Forest Service, and the U.S. Fish and Wildlife Service.

Protected coastal lands provide habitat for native plants and animals, including critical nursery habitat for commercial and recreation fishery species, including shrimp, finfish and crabs.

- This has lasting benefits to local communities by enhancing survival conditions for species and the traditional industries, such as commercial fishing, seafood processing, and charter boat fishing which are based on them.

- Additions to NGO Preserves, National Wildlife Refuges, National Parks, and State Wildlife Management Areas will allow those agencies to better fulfill their mandated missions, increase protection of coastal communities from storms and other disasters, increase lands and waters available for public access, and promote ecotourism and outdoor recreation.

FLOODPLAIN RESTORATION & WATER QUALITY IMPROVEMENT

1. Support for Research & Education to Advance Conservation and Habitat (REACH) – (\$50M)

REACH is a statewide collaborative partnership (state/federal agencies, private industry, farmers/producers, academia, and non-profits) that provides coordination and support for delivering water resource conservation, and documenting the benefits of conservation efforts to natural resources. Documenting and understanding the cumulative benefits towards water resources management on agricultural landscapes not only has tangible benefits to inland waters, but also has direct links to downstream aquatic systems—specifically the Gulf of Mexico.

The Gulf of Mexico Alliance, a strategic partnership among the states of Mississippi, Alabama, Louisiana, Texas, and Florida, is engaged in an initiative to significantly increase regional collaboration to enhance the ecological and economic health of the Gulf of Mexico. Recognizing that the Dead Zone in the Gulf (also called the Hypoxic Zone) is a coastal problem with an inland solution, the Alliance developed nutrient reduction objectives for the entire Mississippi River Basin (MRB), with the ultimate goal of both reducing the size of the hypoxic zone and the occurrences of other hypoxic events across Gulf coastal waters. The Alliance's *Action Plan 2008* calls for 45 percent reductions in total nitrogen and total phosphorus delivered to the Gulf to achieve ecosystem restoration and to reduce the size of the hypoxic zone.

With its transparent and collaborative structure, REACH provides a vehicle to ensure the achievement of the Alliance's goals. REACH (which stands for Research and Education to Advance Conservation and Habitat) quantifies the direct water quality benefits of conservation implemented on farms throughout the MRB and showcases how those benefits are directly linked to reducing the size of the Gulf of Mexico's hypoxic zone.

Critical to conservation practice implementation and the widespread adoption of practices that reduce nutrient run off is knowledge of how such practices work, why they work, and an ability to deliver the relevant information to people who can use it. REACH provides information to the farmer to foster improved landscape stewardship and agricultural production systems by giving

them the hands-on help they require. REACH will document the benefits of current conservation practices implemented on working farms, test new conservation practices along with cutting-edge technologies and disseminate this information across new and existing landscapes within the MRB.

Additionally, REACH will be able to provide farmers and other producers assistance to establish these new innovative conservation practices or implement new technologies.

- REACH is a bottom up approach that showcases how inland on-farm conservation practices, when combined with advances in technology, are beneficial to the health of the Gulf.
- REACH encourages and facilitates profitable and sustainable agriculture by coordinating interdisciplinary collaborations on specific farms, addressing specific interests, from which outcomes can be shared with other producers.
- Ultimately, encouraging sustainable agriculture will lend to support the traditional livelihoods and cultures of these local communities and enhance their local economies.

2. Advance The Mississippi Conservation Reserve Enhancement Program – (\$2M)

One of the key conservation opportunities in Mississippi also plays out across other Gulf states. Agriculture, while vital to local economies and time-honored ways of life, often creates twin challenges in terms of water quality and supply.

Farmers are some of the best conservationists and have a very keen eye for the value and uses of their land. In Mississippi, many have adopted proven conservation farming practices that require less water for irrigation, and also help protect nearby waterways from run-off. Additionally, on lands that are difficult or less profitable to farm, they have been quick to participate in the Wetlands Reserve Program especially within the Mississippi Delta Region. Unfortunately, the program quickly filled up and demand for and interest in conservation programs continues to out strip state agencies' abilities to supply them.

Advancing a Mississippi Conservation Reserve Enhancement Program (MS CREP) would increase the state's capacity to work with farmers whose lands are important for the protection of water supplies that serve the people of Mississippi and ultimately flow to the Gulf of Mexico. By restoring bottomland forests and wetlands, and forests that buffer rivers, MS CREP will improve ground water levels and maintain major drinking water sources for citizens within the project area by reducing non-point source impacts from agricultural run-off and demand for agricultural irrigation.

- A collaborative partnership among state/federal agencies, private industry and non-profits, the MS CREP will provide critical habitat for the federally threatened Louisiana black bear, and the endangered least tern.
- Habitat will also be created for migratory waterfowl, shorebirds and wading birds during the winter and spring months.
- The MS CREP project will also financially benefit the local economies of the target geography. By enrolling crop acreage into the MS CREP, eligible landowners and farmers would financially benefit for putting their eligible properties into a program that pays them for the functional value of their lands to the wider community.

3. Urban Streams Restoration – (\$8.5M)

The Mississippi Coast has a nearly unique natural habitat—a number of small, spring fed natural streams flowing directly into the Mississippi Sound. Located primarily in Harrison County, these streams are in highly urbanized areas and have been dramatically altered over the years. Despite the high level of alteration, they still maintain environmental value, historic significance, and scenic beauty. Careful restoration would improve habitat value that has been lost over the years, and make these streams small, green islands of nature in an urban setting.

Fish, birds, turtles, frogs and otters are a few of the wild creatures that still utilize these areas.

The Conservancy is currently working with partners to develop and coordinate restoration activities at Bear Point Bayou, and plans to expand this effort to 2-3 additional streams in the county.

- Successful restoration will improve water quality in the Gulf of Mexico, provide important wildlife habitat, provide corridors for wildlife migration, and bring conservation to an urban setting, increasing the quality of life for residents.
- In addition, the restored streams will contribute to better drainage, reduced sediment loading, and could contribute to flood control
- Restoration also creates associated jobs, as well as volunteer and community opportunities.



Texas Projects

- Near-Shore Habitat Restoration
- Near-Shore Habitat Restoration/Land Protection
- Near-Shore Land Protection
- Water Quality Restoration

TEXAS

Texas is home to 377 beautiful miles of prairies, wetlands, coastal habitats and barrier islands that contain a remarkable array of plants and animals, and provide innumerable benefits to residents and visitors, from supporting robust tourist and fishing industries to providing a unique quality of life that can be found only along the Gulf Coast. All these businesses depend on strong and resilient coastal and Gulf ecosystems, systems that are currently threatened by development, changes in water quality and quantity, and loss of habitats that buffer the coast from impacts such as sea-level rise and storm surges. A healthy ecosystem means a healthy economy in the Gulf region and for the entire country.

Restoration projects to improve coastal resilience and overall health of the Gulf of Mexico.

MARINE AND COASTAL RESTORATION

1. Oyster reef restoration – (\$588M)

While Texas still has many oyster reefs and a thriving oyster fishery, the extent of oyster reefs along the Texas Gulf Coast has been greatly reduced by harvest for food and shell, and also by reduced freshwater flows that change salinity levels. Since 2000, Texas has experienced a 40 percent decline in oyster reefs, on top of losing more than 25 percent of its historic oyster reefs over the course of the 200 years since 1890.

Most recently, Galveston Bay had 2,000 acres of oyster reef habitat destroyed and silted over by Hurricane Ike in 2008. The loss of these oyster reefs represents not only a loss to the commercial fishing industry in Texas, but also a loss to a number of fish and other marine species that depend on oyster reefs for habitat. Fewer oyster reefs also mean reduced water quality from the loss of these filter feeders, since a single oyster can filter as much as 30 gallons of water a day.

The Nature Conservancy and a number of partners are proposing a major effort to restore as much as 4,000 acres of oyster reefs along the Texas Coast, including in Galveston Bay, Copano Bay, Corpus Christi Bay, and Matagorda Bay. As in other areas of the Gulf, restored oyster reefs:

- improve water quality and clarity;
- provide nursery and forage habitat for numerous fish, birds and other marine species;
- protect shorelines from erosion, and
- can help protect local communities from the effects of storm surge and other disasters.

2. Restore coastal wetlands, seagrass beds, and nesting islands – (\$70M)

Coastal freshwater marshes and islands are important habitat to resident and wintering waterbirds, but are threatened by shoreline erosion and saltwater intrusion. These wetlands also trap sediments and pollutants, improving water quality for both wildlife and people, as well as helping reduce shoreline erosion. Seagrass beds shelter to juvenile shrimp, shellfish and sport fish, including speckled sea trout and redfish shelter. Sea turtles, crabs and water birds come to feed and rest. In fact, the Texas Gulf Coast is world-renowned for its importance to all types of bird life, from common terns to exotic and highly endangered whooping cranes.

Restoring these interconnected habitats—coastal wetlands, seagrass beds, and nesting islands—not only improves the natural health of the Gulf, it also supports a thriving tourist industry centered around the increasingly popular hobby of birding. In fact, the Conservancy’s Mad Island Marsh Preserve has logged the highest number of species—more than 200—in the Audubon Christmas Bird count for the last two years.

Restoring these Texas coastal areas will:

- improve ecosystem function,
- provide habitat for a variety of terrestrial and aquatic species, including wintering waterfowl, highly prized sportfish, and colonial-nesting waterbirds such as brown pelicans, black skimmers, and various species of terns, herons and egrets—species that are of interest to tourists, communities, hunters, anglers and birdwatchers.

3. Native prairie restoration – (\$19M)

Historically, Texas had millions of acres of coastal prairies that supported a diverse assemblage of native plants, grassland birds, wading birds, and the endangered Attwater’s prairie chicken. These prairies also stabilized soil and filtered water flowing into the rivers and streams that empty into the Gulf’s bays and estuaries. Less than 3 percent of this coastal prairie now remains, replaced by agriculture and urban development.

As a result, there are much greater levels of sediments and water contaminants in coastal rivers and bays. Since most of the remaining coastal prairie is in private ownership, working with coastal landowners is the key to conserving and improving this important habitat type. The Nature Conservancy will expand current cooperative efforts to restore coastal prairie habitats, focusing on 200,000-acres of coastal prairie in the Refugio-Goliad region, perhaps the largest contiguous block of native coastal prairie remaining in Texas.

The Conservancy will expand its efforts to assist with grazing management and planning, and using prescribed fire to maintain and enhance coastal prairie habitats, and providing cost incentives for landowners to maintain this unique habitat. In addition, the Conservancy is developing cooperative agreements for harvesting and distributing native prairie seed to restore coastal prairies with locally adapted, native plant species in mid-coast Texas.

Preserving and restoring native prairies:

- helps to stabilize the soil and prevent erosion that damages the water quality of rivers and the waters off the coast,
- preserves an important part of Texas cultural heritage, and
- provides important habitat for many different plants and animals.

3. Coral Reef Conservation and Resilience – (\$15M)

The Flower Garden Banks, located 150 miles off of the Texas Coast, are the largest area of coral reefs in the northern Gulf of Mexico. Though many of the reefs that make up the area of the Flower Garden Banks are within the boundaries of a national marine sanctuary, the reefs continue to face combined challenges sea-level rise, changing water quality, and potential harm from oil and gas exploration in the region. These reefs support an incredible array of marine life, contributing to the overall health and diversity of the Gulf of Mexico.

Around the world, coral reefs are one of the most threatened habitats. To help protect and manage these important resources (coral reefs are part of the foundation of the ocean's food web), the Conservancy and its partners have established the Reef Resilience Network to help efficiently coordinate the management and monitoring of reefs. The Network model—a collaboration of state, federal, industry, non-profit and academic partners—have operated successfully in the Florida Keys and the national marine sanctuary there for more than five years.

The Conservancy will work with partners to implement a similar resilience network for the Flower Garden Banks to help monitor and manage the reefs in ways that seek to enhance their resilience to ongoing stressors, especially changing sea-levels and water temperatures.

Bringing the Reef Resilience Network to the Flower Garden Banks will:

- help improve and increase managers' knowledge of the health of the reefs,
- create economies of scale by using volunteers and coordinated efforts so information can be shared broadly, and managers can benefit from learning gained in other reef resilience

networks around the world, including those in Hawaii, Australia, the Florida Keys and the Caribbean, and

- improve and protect habitat for some of the Gulf's most iconic species, including whale sharks, barracuda, dolphins, sea turtles and numerous corals.

4. Artificial reef construction and fisheries enhancement – (\$30M)

Work with state and local partners, the oil and gas industry, academic institutions and other non profits, the Conservancy seeks to help create an additional 50 acres in five existing artificial reef complexes as part of the Texas Parks and Wildlife Department's popular Artificial Reefs Program.

- Artificial reefs create new near-shore habitat that can enhance coastal species and human uses such as commercial and recreational fisheries. Hundreds of thousands of anglers and divers travel offshore each year and most visit one of the artificial reef sites managed by the Texas Parks and Wildlife Department.
- By providing food and shelter, artificial reefs can enhance overfished populations of resident reef fish like snapper and grouper, and transient species like mackerel, shark and billfish can benefit by feeding on the resident fish.

5. Sea Turtle Conservation and Restoration – (\$15M)

Sea turtles are a unique part of the biodiversity of the Gulf of Mexico and they have been greatly impacted by development and human activity in the Gulf. There are five species of sea turtles found in the Gulf of Mexico, all of which are either endangered or threatened. The most endangered species of sea turtle in the world is the Kemp's Ridley, which is also the most common species found in the waters off of Texas.

The Kemp's Ridley's life cycle is tied to the Gulf of Mexico coast since it provides important reproductive, foraging and migratory habitat, and the largest known nesting beaches are in Mexico and Texas. But sea turtle populations have been greatly reduced over the years by loss of protected beach nesting habitat, egg collection for food, and accidental deaths when caught in shrimp and fishing nets. Funds would be used to:

- actively conserve at least 10 known nesting beaches, and the waters adjacent by finding nests, supporting law enforcement, developing monitoring programs and promoting coordination among agencies and citizens;
- protect key nesting sites/habitat by acquiring two properties, especially in the lower Texas Coast;

- help eliminate mortality from incidental catch in commercial shrimping by purchasing and distributing Turtle Excluder Devices (TEDS) to achieve full compliance with the regulations requiring TED;
- develop a comprehensive educational curriculum and program that communicates the need to conserve sea turtles and their nesting beaches and foraging habitat in Texas;
- and help care for and rehabilitate injured sea turtles found at the project sites.

6. Lionfish Assessment, Control and Education – (\$10M)

Lionfish are an exotic species, originally from the Indian and Western Pacific oceans, that have been accidentally introduced to Gulf, Atlantic and Caribbean waters. Unfortunately, lionfish populations are rapidly expanding into a huge variety of marine habitats and displacing many species of native fish, including sport fish and commercial species.

In addition, lionfish are voracious predators and if their populations are left unchecked, it is feared they might disrupt the food web and damage the health of coral reefs and other sensitive Gulf habitats. To manage the risk, the Conservancy will work with partners to:

- develop a scientific assessment of impacts and potential future impacts in the Gulf,
- design and implement a control and monitoring program,
- conduct fisheries restoration projects where lionfish have already damaged native fish populations, and
- develop a comprehensive education and outreach program to help anglers and divers learn to recognize this distinctive fish.

PROTECT COASTAL LANDS

1. Land Acquisition and Conservation Easements – (\$183M)

Acquiring lands and easements that protect the Gulf of Mexico’s critically important bays, estuaries, barrier islands and coastal rivers ultimately provides habitat for animals, plants and people, protects coastal communities during storm events, protects and enhances coastal fisheries, and supports heritage-based tourism and recreational opportunities.

The lands include tracts near Matagorda Bay to help expand nesting grounds for endangered whooping cranes, as well as the Columbia Bottomlands south of Houston where the Colorado, Brazos and San Bernard Rivers provide important fresh water to the Gulf’s bays and estuaries. Farther south, the Conservancy and partners are also seeking restoration opportunities and identifying lands and waters instrumental in the protection and restoration of Laguna Madre.

The conservation and restoration of key tracts along the Texas Gulf Coast would provide tremendous ecological and coastal resilience benefits, including:

- enhanced and expanded public access to lands and waters for recreation,
- increased protection from storm surge and other coastal hazards, and
- additional habitat for many different species, including birds, fish, mammals and invertebrates.

2. Lonestar Coastal National Recreation Area (50,000 acres) – (\$50M)²

In the wake of Hurricane Ike, a unique consortium of citizens, business leaders, academic, municipal, and conservation organizations are proposing to protect a 130-mile length of the Texas Gulf Coast in the four-county area around Galveston Bay to provide buffer and storm protection to Galveston and the Houston metropolitan area.

The consortium is acting on the findings of Rice University's Severe Storm Prediction Education and Evacuation from Disaster Center (SSPEED) that documents the benefits of natural coastal structures in reducing damage to urban areas from storm surges and flooding. The National Recreation Area proposal is one of several strategies proposed by the SSPEED coalition, representing a combination of 'green' and 'gray' infrastructure (natural habitats and engineered structures) that would provide landowners financial incentives to protect 450,000 acres of tidal marshland, brackish wetlands and coastal prairie and about 150,000 acres of bay and estuarine area south of Houston and Galveston, some of which has already been protected by the U.S. Fish and Wildlife Service, The Nature Conservancy, Texas Parks and Wildlife Department, and units of local government.

In the aftermath of Ike's devastation, it became clear that undeveloped areas of the Texas coastline helped protect inland communities from the massive storm. People who lived near these natural areas suffered less damage because the land absorbed the floodwater and buffered the storm surge.

Creating this National Recreation Area would have numerous benefits, including:

- Providing strong natural defenses for the 1.2 million people and hundreds of billions of dollars of property in the greater Galveston and Houston metropolitan areas;

² (<http://sspeed.rice.edu/sspeed>; <http://www.npca.org/news/reports/txcoastaleconomic.html>; <http://www.parkadvocate.org/a-new-model-for-parks-could-help-revitalize-texas-gulf-coast>; <http://houstonwilderness.org/index.php/nationalrecreationarea>)

- Increasing economic development and diversity. Studies estimate that by its tenth anniversary, the recreation area could attract 1.5 million new visitors annually, create more than 5,000 local jobs, and sustain a 2 percent growth in the private economy.

Ensuring Freshwater Flows to Texas Bays and Estuaries – (\$200M)

A critical issue for the health of the Texas Gulf Coast and the Western Gulf of Mexico is the quantity and quality of fresh water that flows into Texas' 11 major bays and estuaries. Without steady, reliable supplies of clean, fresh water, the bays and estuaries begin to lose their value as nursery areas for important commercial and sportfish, attractiveness to tourists, and ability to support all of the functions of a healthy coast.

In the wake of lingering drought, Texas's rivers are under increasing stress, and the 2012 Texas Water Plan states the risk plainly: in serious drought conditions, Texas does not and will not have enough water to meet the needs of its people, its businesses, and its agricultural enterprises. In fact, the flows of several Texas rivers are already half of what they were historically, impacting the health and productivity of Texas bays and estuaries by allowing the water to become too salty and too shallow to support the species that have long depended on them. In turn, degraded water quality in bays and estuaries damages the waters of the wider Gulf.

To begin to restore and protect fresh water flows to the Gulf, the Conservancy believes initial efforts should focus on the Guadalupe and San Antonio river basins. Rising in the Hill Country, the Guadalupe River is one of the finest rivers in Texas. It is renowned for tubing, rafting, canoeing, fishing, swimming, and many other great activities for relaxing and enjoying the outdoors. The San Antonio River rises from headwaters springs before making its way through its namesake city and eventually joining the Guadalupe River as it flows to the Gulf. The spring flow of the San Antonio and its principal tributaries, the Medina River and Cibolo Creek, makes the volume of the river steadier than that of most Texas streams.

Protecting and restoring these rivers in concert with the State Water Plan, would include a number of strategies and approaches for freshwater conservation that have been identified, such as developing 'scorecards' to assess the relative health of Texas rivers and aquifers, improved monitoring of river water quality and flow, financial incentives towards securing freshwater flows such as buying water rights, paying farmers to improve irrigation efficiency, incentives for retiring irrigated lands, restoring riparian buffers, and working with rural and urban landowners to reduce non-point source pollution.

- Restoring and protecting the Gulf’s water quality benefits everyone and everything that lives in the Gulf or depends on it. Improved water quality works in tandem with habitat restoration to increase the ecosystem services provided by a healthy Gulf.
- Clean, abundant supplies of fresh water are the lifeblood of the Gulf’s fishing, agriculture and tourism industries, and provide important sources of drinking water for millions of Gulf Coast residents.

Gulf of Mexico planning, monitoring, research and science support – (\$96M)

Good ecological data is essential to setting priorities for restoration across the Gulf, as well as for assessing the success and impact of various coastal restoration efforts. Unfortunately, scientific efforts across the Gulf are currently too small and disconnected, and what data are available are scattered, incomplete and often difficult for conservation partners and scientists to access.

No single entity can assess and accomplish all the coastal restoration and protection needed on the Texas Gulf Coast alone. While Texas is fortunate to have a large number of partners that work well together, the state does not have a comprehensive plan for Gulf restoration. And though current partnership efforts are strong, they lack coordination and do not contribute to Gulf restoration as effectively as they could. A well-funded, widely supported process to develop statewide and coastal restoration plans for Texas would improve collaboration and integration of proposals to restore coastal wetlands, grassland, forest, freshwater, marine, urban habitats and associated benefits to human communities.

Potential partners in developing the restoration plans include Harte Gulf of Mexico Research Institute (HRI), Galveston Bay Foundation, Coastal Bend Bays and Estuaries Program (CBBEP), Coastal Conservation Association (CCA), Ducks Unlimited (DU), Audubon Texas, Texas Parks and Wildlife Dept. (TPWD), Texas General Land Office (GLO), U.S. Fish and Wildlife Service (USFWS) and municipalities.

Investment in research and planning, as well as developing collaborative tools will significantly improve proposed Gulf restoration efforts in Texas and around the Gulf. Online data and decision-making tools could help scientists and practitioners to make the most informed decisions possible by enabling them to assess impacts of sea-level rise, determine the values provided by environmental services, and monitor the state of coastal ecosystems. Investments in science and management in the Gulf could include a conservation and sustainability assessment and plan, a marine biodiversity online dashboard, a coastal and marine ecosystem services restoration toolkit to standardize planning and restoration processes, and a marine

conservation community of practice network and outreach to coordinate restoration in states and across the Gulf.

Improving science and collaboration in the Gulf would help ensure:

- the most effective, coordinated investment of restoration funds resulting from the Deepwater Horizon oil spill, and
- improved and efficient decision-making, monitoring and management of the Gulf's natural resources.